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EPA Kicks Off Rich County Water Quality Project

Woodruff, Utah—Summers at the Stuart Hopkin ranch near Woodruff, Utah are usually fairly quiet. This year, however, the homestead is a buzz with activity as Hopkin and his adult son, Chris, build a series of new winter corrals for nearly 600 head of cattle. For the past 80 years Hopkin's cattle have wintered right on the Bear River, near his barns and equipment, and in full view of his home. To preserve the river's water quality – and protect a possible future drinking water source for the Wasatch Front – Hopkin placed his new corrals out of site, over a mile off the river.

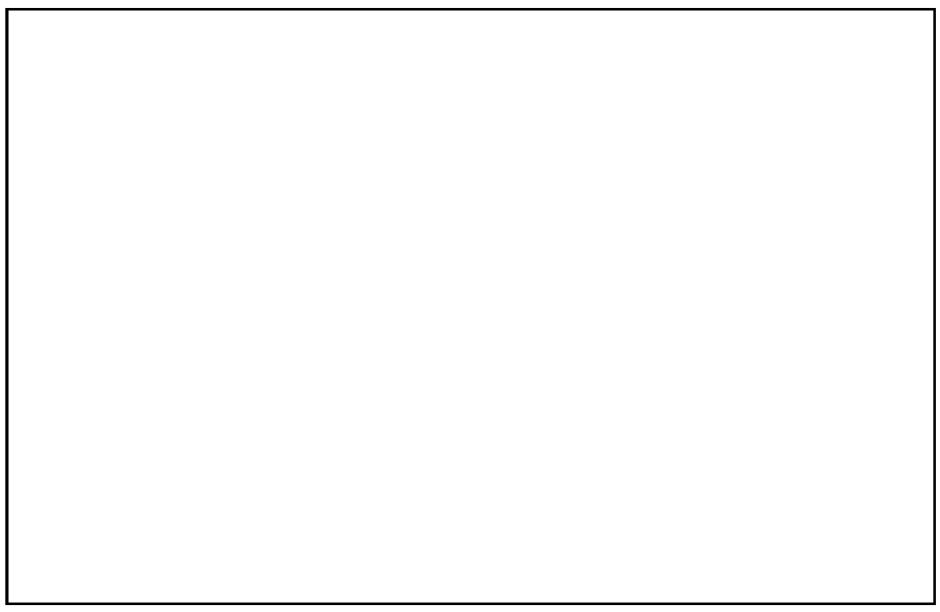
"We knew we had a water quality problem, but we didn't know exactly what to do or how to pay for it," Stuart Hopkin said.

Enter the U.S. Environmental Protection Agency. A grant from Section 319 of the Clean Water Act kick-started the project. Since then, U.S. Fish and Wildlife Service, U.S. Department of Agriculture, Natural Resources Conservation Service and EPA Region 8 Regional Administrator's office have added to the pot, expected to reach nearly $60,000. In addition, Hopkin's contribution in labor, other in-kind contributions, and cash will be about $40,000.

During a tour and official kickoff of the project in late July, U.S. EPA Regional Administrator Bill Yellowtail got to see firsthand what the project will involve.

The first part of the project will consist of building new corrals and a manger, and relocating scales and other equipment. The new site is expected to be ready this autumn when the cattle return to the ranch from the mountains of Summit and Morgan counties. Next spring work will begin on restoring the riparian area where the corrals have been. Remaining manure will be moved, wetland plants will be established in the lower areas that are naturally wet, and other riparian vegetation will be planted around the new wetlands. It could take as long as three growing seasons to finish the restoration work.

"I am very excited about this collaboration between federal, state and local agencies, and a rancher. This project has potential to reap significant economic and environmental benefits," EPA Regional Administrator Bill Yellowtail said. As a rancher himself from Montana, Yellowtail is strongly in favor of voluntary cooperative efforts between agricultural producers and the government to solve nonpoint source pollution problems. "The regulatory approach used by EPA to clean up point source pollution just isn't right for farmers and ranchers."



EPA Region VIII administrator (center, wearing red hat) talks about the benefits of Stuart Hopkin's project. Hopkin and others look on.

Even while encouraging farmers and ranchers to voluntarily improve environmental conditions, Yellowtail said that time is running out for them to demonstrate improvements.

"I feel a little desperate about this. There are people in the government and my own agency who are growing impatient about this voluntary idea. We have a finite amount of time before regulators come in and say, 'Too late.'"

"Clean water is everybody's business," said Cary G. Peterson, commissioner, Utah Department of Agriculture and Food.

The rancher and agency representatives hope this project will inspire other area ranchers to consider similar initiatives where their operations impact water quality on the Bear River. A proactive approach to protecting the Bear River is a win-win situation for the rancher and the environment. There are estimated to be about 50 ranches along or near the river just in the Rich County portion of the Bear River Watershed.

"We figure this project is worth it just to stay ahead of the regulations," Chris Hopkin said, referring to a new national strategy to address nonpoint source pollution from Concentrated Animal Feeding Operations (CAFO's) such as the Hopkins' ranch.

For Stuart Hopkin, the toughest part of the decision to go forward with the project was trusting an agency that hasn't been looked upon too favorably by the ranching community.

"It's true. Those three letter of the alphabet, EPA, can strike fear into the hearts of some," he said. "We haven't heard too many kind words over the past 20 years about ranching."

"Ranchers view EPA as the enemy," Yellowtail admitted. However, it appears he is working diligently to change that way of thinking.

Hopkin's foresight will provide long-term benefits to all Wasatch Front residents. As population pressure compels area officials to identify new drinking

"Hopkin" continued on page 2

Hopkin Stays Ahead Regulations

Project Should Turn CAFO to AFO

Since 1987, it has been written into the Clean Water Act that larger agricultural animal feeding operations would be required to have water pollution discharge permits. These livestock businesses are subject to many of the same water quality regulations required of major industry and municipalities since the passage of the original act in 1972. To date, however, enforcement of this provision in the statute has been spotty at best.

The new joint national strategy on concentrated animal feeding operations (CAFOs) developed by EPA and USDA and finalized in March of 1999, is an effort to enforce those regulatory standards nationwide.

Under the criteria of what constitutes a CAFO, Stuart Hopkin's ranch, as it stands now, would qualify as a CAFO and would be issued a pollution discharge permit. The first criteria is size of operation. Any operation with 1,000 animal units or more qualifies as a CAFO. Hopkin only has about 600 animal units at any one time. The second criteria is having a direct pollution discharge to the stream via overland flow or a manmade conveyance such as a pipe. Under that criteria, Hopkin's current setup definitely qualifies as a CAFO. By moving his corrals more than a miles away from the river and up gradient, he significantly reduces his chances of polluting surface

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water sources, the Bear River usually tops the list. By leading the Bear River ranching community in protecting this precious resource, Hopkin promotes a long-term vision.

"I want this ranch to be sustainable for my children and their children, if they want to run it," Hopkin said.

Hopkin's ranch consists of two parcels, 640 acres each and one parcel of 480 acres. During the summer the cattle graze higher ground in Summit and Morgan counties. The main activity at the ranch property during summer months in growing and cultivating grass hay that is consumed by the cattle during the winter months.

Bill Yellowtail, EPA regional administrator, digs a ceremonial post hole while visiting the Stuart Hopkin water quality project.

"Regulations" continued from front

or groundwater and most likely will not qualify as a CAFO.

The changes to Hopkin's operation will not come cheap. The overall project is expected to cost nearly $100,000, with Hopkin paying for about 40 percent of the total.

Hopkin wants to keep his ranch financially and environmentally sustainable well into the next century. Remaining environmentally sustainable means changing the way he manages the herd.

"Stuart is ahead of the game," Said Bill Yellowtail, U.S. EPA Region 8 Administrator. "The alternative is a regulatory scene. If we miss this window of opportunity, we default to a regulatory program."

When the Hopkin family started the ranch on its current location more than 80 years ago, there was no Natural Resource Conservation Service or EPA to advise farmers and ranchers about livestock manure management.

"We understand things differently now. It used to be that this system was state-of-the-art," Yellowtail said about Hopkin's corrals Things have changed drastically over the years. For example, EPA is being sued in more than 30 states for not upholding the water quality standards set by the Clean Water Act more than a quarter century ago.

"You people are ahead of the game," Yellowtail commented referring to the strong relationships in Utah among agencies, farm organizations and landowners. Yellowtail and agency representatives at the Hopkin project kickoff event hope that the positive media coverage will prompt other ranchers and farmers along the Bear River to start their own water quality projects.

A Natural Change

The two photos below are of the same corral site. The top photo was taken March 29, 1999, before the growing season began and while the cattle were still in the feed yard.

The photo below was taken July 27, 1999, two full months after the cows were moved to higher ground.

The second photo clearly shows vegetation where there was none in March when the cows were present.

While this natural recovery is important, this site will be helped along greatly by human efforts to reestablish wetlands and wildlife habitat.

Cattle have been spending the winter months within a few feet of the Bear River. Not only is this bad for water quality, the cold air gets trapped by the river. Hopkin hopes that moving the cattle upland will help speed their growth and development.

Utah Watershed Review

Editor.....Jack Wilbur

Editorial Review

If you would like to request an additional copy, make a comment or suggest a story or watershed focus idea, please call **Jack Wilbur** (801) 538-7098. Or write:

Utah Department of Agriculture and Food
350 North Redwood Road
Box 146500
SLC, UT 84114-6500
E-mail: agmain.jwilbur@email.state.ut.us

A Continued Look at Utah's 303(d) List of Impaired Waters

Editor's note:

This is the third part of an on-going look at the state's 303(d) list of impaired waters.

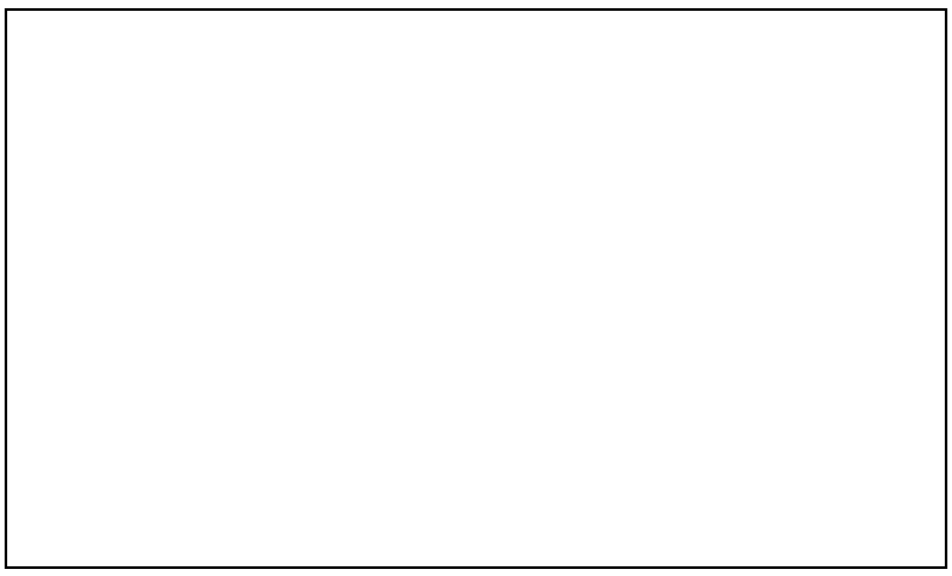
Every two years the Utah Department of Environmental Quality is required under Section 303(d) of the Clean Water Act. This list is active between April 1998 and April 2000.

In this installment, we continue our look at lakes on the 303(d) list within the drainages of the Great Salt Lake Basin.

Waterbody Name	Waterbody Size Acres	Specific Pollutant	Priority for TMDL (High/Low)	Targeted for TMDL 4/98- 4/2000
Great Salt Lake Basin				
Bear River Drainage				
Birch Creek Reservoir #2	**63**	**Total Phosphorus, pH, Dissolved Oxygen,**	**Low**	**No**
Hyrum Reservoir.	**438**	**Total Phosphorus, Dissolved Oxygen, Temperature**	**Low**	**No**
Mantua Reservoir	**554**	**Total Phosphorus, Dissolved Oxygen, pH**	**High**	**Yes**
Newton Reservoir	**350**	**Dissolve Oxygen, Total Phosphorus, Temperature**	**Low**	**No**
Porcupine Reservoir	**190**	**Dissolved Oxygen, pH**	**Low**	**No**
Tony Grove Reservoir	**25**	**Dissolved Oxygen**	**Low**	**No**
Woodruff Crek Reservoir	**90**	**pH**	**Low**	**No**
Great Salt Lake Basin				
Sevier River Drainage				
Barney Reservoir	**19**	**Total Phosphorus, Temperature, Dissolved Oxygen**	**Low**	**No**
Gunnison Reservoir	**1,287**	**Total Phosphorus, Dissolve Oxygen**	**Low**	**No**
Kents Lake	**26**	**Total Phosphorus, Dissolved Oxygen, pH**	**Low**	**No**
Koosharem Reservoir	**310**	**Total Phosphorus, Dissolved Oxygen,**	**Low**	**No**
LaBaron Reservoir	**24**	**Dissolved Oxygen, pH**	**Low**	**No**
Lower Box Creek Reservoir	**50**	**Dissolved Oxygen, pH, Total Phosphorus**	**Low**	**No**
Manning Meadow Reservoir	**59**	**Dissolve Oxygen**	**Low**	**No**
Minersville Reservoir	**990**	**Total Phosphorus, Dissolved Oxygen Temperature**	**Low**	**No**
New Castle Reservoir	**163**	**Total Phosphorus, Dissolved Oxygen Temperature**	**Low**	**No**
Nine Mile Reservoir	**197**	**Total Phosphorus, Dissolved Oxygen, Temperature**	**Low**	**No**
Palisades Reservoir	**66**	**Temperature, pH, Dissolved Oxygen**	**Low**	**No**
Otter Creek Reservoir	**2,520**	**Total Phosphorus, Dissolved Oxygen**	**Low**	**No**
Panguitch Lake	**1,248**	**Total Phosphorus, Dissolved Oxygen**	**Low**	**No**
Pine Lake	**77**	**Dissolved Oxygen, pH**	**Low**	**No**
Puffer Lake	**65**	**Dissolved Oxygen**	**Low**	**No**
Red Creek Reservoir (Iron Co.)	**39**	**Dissolved Oxygen, pH**	**Low**	**No**
Rexs Reservoir	**46**	**Dissolved Oxygen**	**Low**	**No**
Three Creeks Reservoir	**25**	**Temperature, pH**	**Low**	**No**
Tropic Reservoir	**180**	**Dissolved Oxygen, pH**	**Low**	**No**
Upper Enterprise Res.	**200**	**Total Phosphorus, Dissolved Oxygen, Temperature**	**Low**	**No**
Yankee Meadow reservoir	**5**	**pH**	**Low**	**No**
Great Salt Lake Basin				
Jordan River Drainage				
Decker Lake	**?**	**Total Phosphorus, Dissolved Oxygen, Total Suspended Solids**	**Low**	**No**
Mary Lake	**23**	**pH**	**Low**	**No**
Little Dell Reservoir	**249**	**Temperature**	**Low**	**No**

NPS Conference Stream Monitoring Section:

Conference Participants Get Their Feet Wet in Water Quality Field Work--Literally



Jack Wilbur, Utah Department of Agriculture and Food, helps with the physical monitoring portion of the stream monitoring training.

Teachers and agency representatives got a chance the literally get their feet wet at the volunteer stream monitoring section of the 1999 Utah Nonpoint Source (NPS) Water Quality Conference.

"We wanted to give some of the technical people a chance to see first-hand what we do the bridge the gap between education and on-ground water quality efforts," said Jack Wilbur, information and education coordinator for Utah's state NPS program.

Conference participants were divided into three groups. Each day about a third of the total registrants hopped on the bus bound for Perception Park campground in Ogden Canyon to take part in the water quality monitoring training.

Once at the site, the small group was divided into three even smaller groups to rotate through the monitoring stations.

"we've divided this program into three types of monitoring: physical, chemical and biological," said Nancy Mesner, extension water quality specialist.

Physical monitoring refers to the physical characteristics of the stream. Mike Allred, extension water quality specialist in Cache County led this part of the training.

"When doing this work with youth groups you have to stress safety," Allred remarked before he explained the procedure. "Even though the kits come with chest waders, we suggest not letting the kids get in water above their knees."

The physical parameters measured include width, depth, water and air temperature and flow. While this part of the exercise does not specifically indicate water quality, it does provide good information that helps in understanding the type of stream and what the water quality for that type should be in perfect conditions.

Within the group, usually two or three people should wear waders and get into the stream. Those who stay on shore can read the procedures to the people in the stream, take photographs, and write the results on the data sheet.

Orange flags are used as distance markers. Using a long measuring tape, two of the people in the stream insert flags a beginning point, then at 25' and 50 feet'. Stream flow is measured using a ping pong ball or similar object. One person drops the ball slightly upstream of the flag at zero. When the ball crosses the starting point the person who dropped the ball yells start to the person on shore with a stop watch. One or two people stand at the end point of 50' to catch the ball. When the ball crosses that point, they yell stop. If possible this test is conducted three times, once in the center of the channel and once each closer to the left bank and the right bank.

The depth is also measured at three spots: close to each bank and in the middle. The width is measured across the channel to the edge of the water. The width is measured at the location of each of the three orange flags.

Participants also measure how much sediment is in the water, or how turbid it is, by filling a large clear plastic tube with stream water. The bottom of the tube is painted black and white so that it can be seen when looking through clear water. There is a water release value and measurement marking up the tube. Water is release from the tube until the colored bottom is visible. The value of water left is then recorded as the turbidity level.

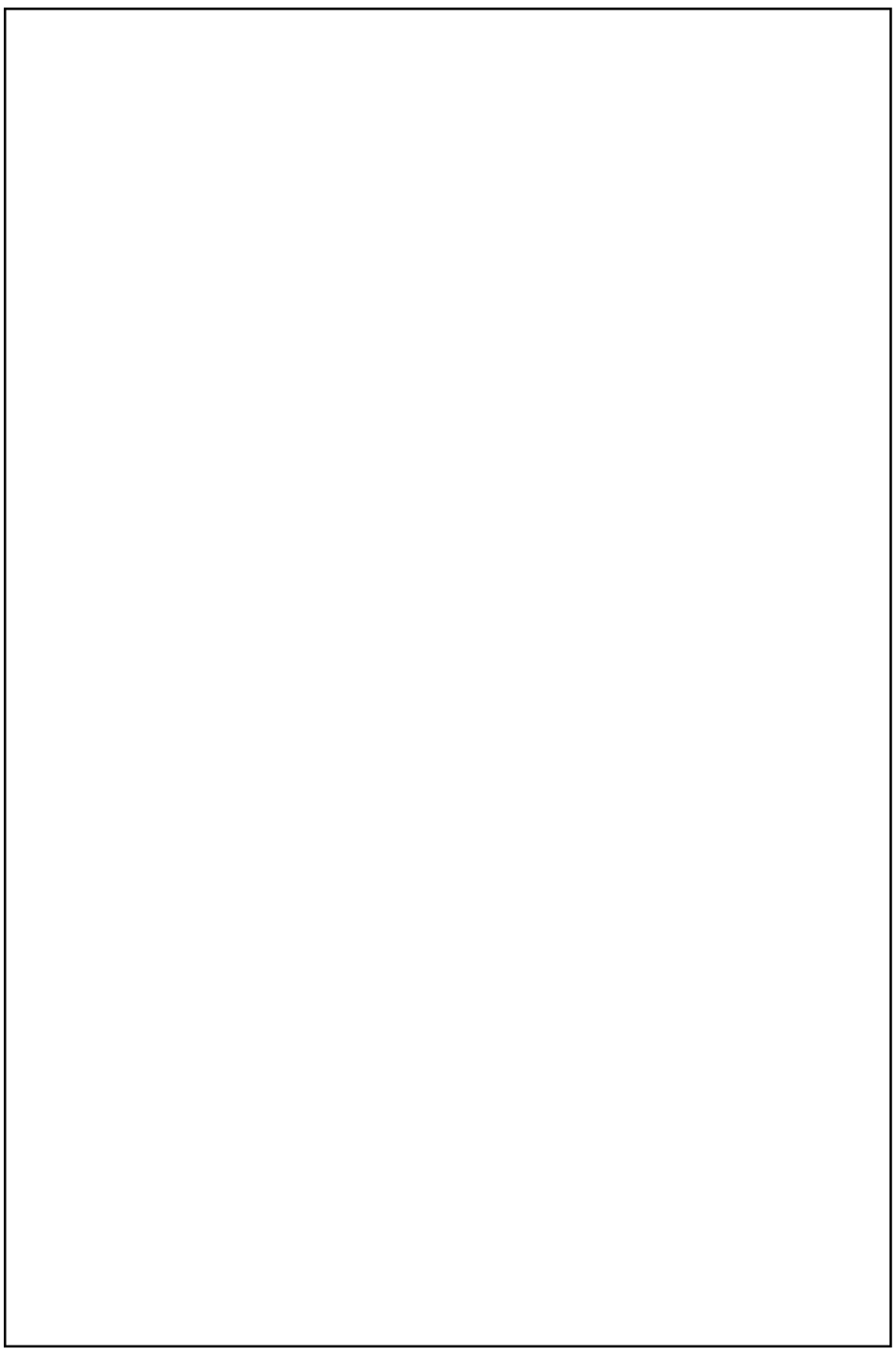
The water temperature and the air temperature are also recorded.

Another important aspect of assessing the physical conditions of the stream is drawing a site map of the area and writing about what the area looks like. Not only does this exercise add other educational disciplines to a stream monitoring fiel trip, it asks students to think about the asthetic quality of the area. Allred explained to the group that when doing these activities with school or scouting groups that it is important to keep the young people busy with a variety of projects and assignments.

The water chemistry part of the training was like being back in science class, some of the participants said. Nancy mesner concuted five experiements: nitrate, phosphate, amonia, dissolved oxygen and PH. Mesner started by explaining that the field tests done with Hach kits do not life up to the standards of the EPA-certified water testing labs, such as the one at the Weber basin Water Conservancy office. Each day representatives from Weber basin came at lunch time and talked about their precedures. They demonstrated some of their equipment so that the group could see the differences.

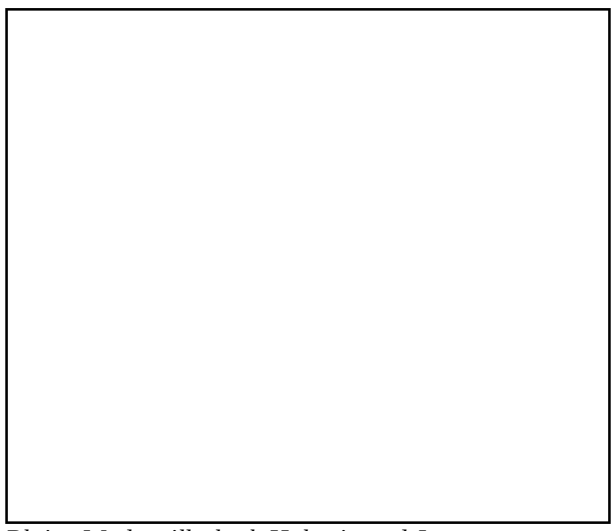
The final part of the monitoring day was collecting and identifying aquatic insects. Members of the National Aquatics laboratory at Utah State University conducted this part of the day. Participants got to see how to take a sample and got a crash course in insect identification. Participants learned that some insects like stone flies and may flies are not very pollution tolerant. If they exist in good quantities in a stream then the chances pretty good that the quality of the water is pretty good.

Volunteer stream monitoring is a part of the Adopt-A-Waterbody program. The Utah Division of Water Quality and the Utah Department of Agriculture and Food have sub-contracted with Utah State University Extension to put together the volunteer stream monitoring kits and educational resource materials.



Eric Worthen and Rhonda Miller of Utah State University conduct the dissolved oxygen test during the stream monitoring day of the Utah Nonpoint Source Conference. Worthen adds a reagent one drop at a time until the vile of orange-yellow colored water turns perfectly clear. Miller counts the drops. Each drop represent 1 mg/l. Ten drops, for example would equal 10 mg/l of oxygen in the water.

Conference Tour Looks at Livestock Manure Management



Blaine Wade milks both Holstein and Jersey cows. As his herd increases, so will his manure management concerns.

The 1999 Utah Nonpoint Source Conference took on a unique challenge during one of its three tours: write a comprehensive nutrient management plan (CNMP) to help a dairy farmer stay in compliance with concentrated animal feeding operation (CAFO) strategies.

Blaine Wade operates a 480-cow dairy west of Ogden, UT, near the Great Salt Lake. To stay competitive he recently bought more land plans to expand his herd to more than 700 cows. Along with the normal concerns any business person would have when planning expansion, Wade has the additional concern of permitting and enforcement as a Concentrated Animal Feeding Operation (CAFO).

Because Wade's property is not adjacent to a waterway and does not have direct overland flow or a man-made conveyance into live waters, the size of his herd will probably be the only factor determining whether his operation is regulated as a CAFO. Manure management is one of the dairy's biggest concerns. It is the major issue that needs to be addressed by a CNMP.

Wade has about 600 acres of land with the dairy. The acreage is divided into three different properties. Two of the properties are several miles apart. He has been raising corn, wheat, and alfalfa in rotation and will be going to a 5-year alfalfa rotation and a 4-5-year rotation for corn. Manure is currently applied only to the corn during the fall, winter and spring. Manure is plowed and/or disked into the ground before planting. One half of the acreage is irrigated with water from a sewage treatment plant. Most of the land had been laser leveled and is flood irrigated. Irrigation efficiencies are between 30 to 40 percent. All of the land has a water table from 20 to 60" in depth. Soil are silty clay loam, loam and fine sandy loam. He does not have enough land to match the nutrient needs of the crops grown with the manure produced on the dairy.

There are no storage facilities in the feedlots. Manure is either hauled directly to the field when possible or is piled on waste ground where it is hauled to the fields when conditions are permissible. Dead animals are buried in the ground.

Wade would like to build a new barn with a flush system and an above-ground aerobic pond. He has also been looking at the possibility of composting all of the manure and putting the barn wash water into an evaporation pond. If he composts the manure, he could sell the excess to neighboring homeowners.

After touring various sites at Wade's dairy, the tour moved to South Weber, just over the line in Davis County to visit John Combe's dairy farm.

Combe is almost completely vertically integrated in his operation. He pasteurizes and sells the milk that his cows produce. He also composts the raw manure generated by the cattle and sells the compost.

The visit in the afternoon to the Combe dairy gave conference participants to look at a composting operation that is profitable and working well.

Upon returning to the hotel, the tour became a classroom instructional and brainstorming session. Kerry Goodrich, Natural Resource Conservation Service, and Mark Peterson, Utah Farm Bureau federation, outlined the elements that should be included in a CNMP. The group then discussed options for Wade's dairy. While each day's group had slightly different recommendations, almost all participants believe that Wade should include composting in his operation.

The unique training opportunity was well received by conference participants.

Ogden Bay Tour Gives Insight to Wetland/Wildlife Management

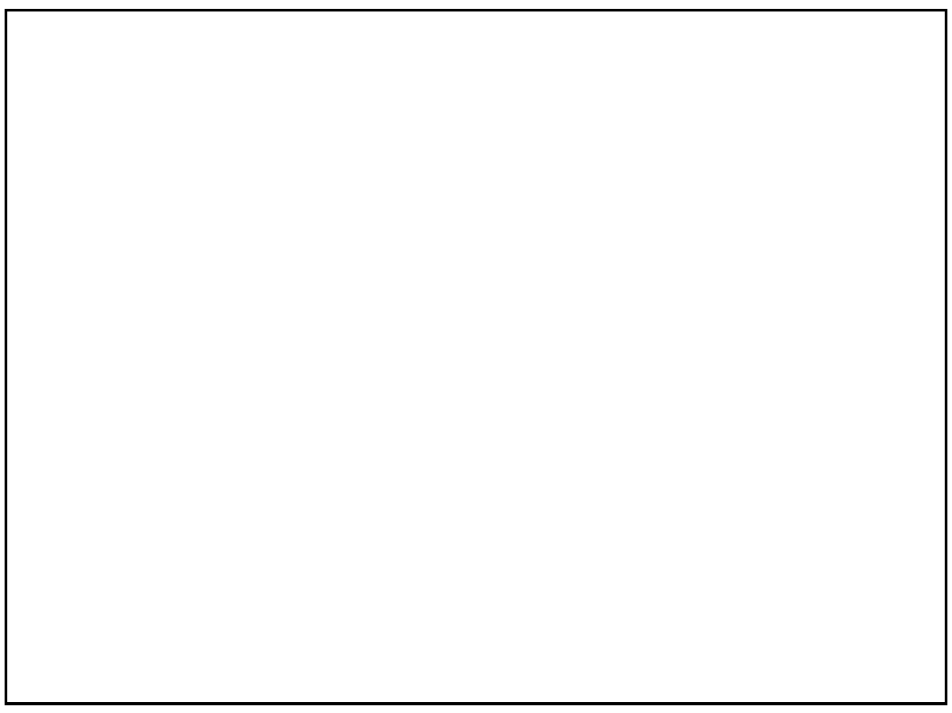
Val Bochman has a big job managing nearly 20,000 acres of wetlands at the Ogden Bay Nature Refuge located along the northeast shore of the Great Salt Lake. Val is the resident Wildlife Biologist who organized workshops for the annual Non-point Source Pollution Conference held August 3 - 5 at the Marriot Hotel in Ogden. The conference focused on monitoring river water quality, improving concentrated animal feeding operations to protect water quality and water management of wetlands.

Val related the history of the pioneers who moved into the valley and began to divert water from the Ogden and Weber Rivers for irrigation purposes. As a result, the wetland ponds along the shores of the Great Salt Lake became stagnant. In 1910, 1000's of waterfowl were lost due to botulism, a disease caused from oxygen deficient or anaerobic conditions in the water. In the 1930's, a Civilian Conservation Corp began a wetlands restoration project building 40 miles of dikes to control the water level in the wetlands.

In 1984, the Great Salt Lake flooded the Ogden Bay Refuge and killed trees and vegetation. That wasn't all bad, said Bochman. Salt water helps to control exotic vegetation which overtakes the more valuable native vegetation. In addition, research shows that a wetland is most productive in the emerging state or within the first five years of production. To rebuild after the flood, all the Division of Wildlife had to do was to add fresh water and dormant seeds in the soil began to grow.

Other than exotic vegetation, challenges that Division of Wildlife must face are related to the quality of water they receive. The refuge gets water from irrigation run-off, not directly from the rivers. That brings pesticides, fertilizers and silt into Ogden Bay. Approximately 250,000 tons of silt must be cleaned from the head gates annually so that the ponds won't fill up and dry out. Heavy metals such as lead, mercury, zinc and selenium come from abandoned mining sites in the Uinta Mountains and are carried downstream to the wetlands. Metals cause problems in the reproductive cycle of many waterfowl and shore birds, reducing their numbers. Selenium is the cause of physical or neurological defects in waterfowl embryos. AThe young chicks don=t imprint on their mothers and wander away from the nest to be eaten by predators.

The Ogden Bay Bird Refuge is an extremely important migratory route in the Western Hemisphere for many species of birds including Snowy Plover, American Avocet and Peregrine Falcon. It is the 5th largest winter range for the Bald Eagle. Migratory birds must have a place to stop and feed for several days before they continue their journey to California and Mexico. The Division of Wildlife Resources is looking to other state agencies for help in controlling water pollution upstream before it becomes an even bigger problem in the wetlands; especially for threatened or endangered species of birds.



Brine flies flock to the shore line of the Great Salt Lake. These flies are important part of the food chain, as many birds include the flies as a major part of their diet.

GSL Management Plan ready for Review

It started out to be a one-year project that lasted three years, but the Great Salt Lake management plan is finally about ready.

The plan, which was started in 199 is now being reviewed by experts and might be ready for presentation to the Utah Legislature as early as the October monthly interim session, according to Kathleen Clarke, executive director, Utah Department of Natural Resources (DNR).

“This has turned out to be more complex than we had ever imagined,” Clarke Said. Now that the writing is done, the public comment period will soon begin, she added.

“We’d like to have the public comment period this fall,” she said. Then another round of writing could be done during the winter, a time when most natural resource project officers are in their offices a lot anyway.

The Great Salt Lake covers parts of five counties and numerous state agencies are involved in its regulation. Those agencies include State Parks, Wildlife resources, Environmental Quality and Transportation.

Clarke’s department wants to come up with coordinated management objectives and policies that can serve as a standard for future state planning efforts.

One of the main goals is to protect the lake’s resources, including minerals extraction by companies such as IMC Kalium, wildlife preserves such as the Bear River Migratory Bird Refuge, and recreation opportunities such as sailing and waterfowl hunting.

The plan calls for providing reasonable beneficial uses of those resources consistent with their long-term protection and conservation, Clarke added.

As the management plan heads toward final approval, the department is dealing with two critical issues—salinity differences between the lake’s northwest arm and the rest of the lake, and an operation policy for the moth-balled desert pumping plant.

Because virtually no fresh water empties into the lake’s northwest arm, and because it is almost completely separate from the rest of the lake by the east-west railroad causeway, its salinity level is about 28 percent. Salt concentration in the rest of the lake is about 15 percent.

The easiest way to make the salinity levels more equal is to remove the railroad causeway or make a significant number of openings in the earthen barrier. That would benefit mineral extraction companies that cannot use the water with more brine in it from the northwest arm.

With the lake’s level on the rise again, numerous citizens have urged DNR to restart the pumps to protect the highway causeway running through Antelope Island.

The pumps were installed along the west shore in the mid 19080s, when the lake’s elevation exceeded 4,211 feet above sea level. Lake water was pumped west into the Great Salt lake Desert, reducing the threat of flood damage to property, utilities and highways along the east shore.

The lake’s elevation peaked at about 4,204.6 feet above sea level this summer, which is about 2 feet below the top of the Antelope Island causeway. Because it is near the top of the causeway, wave action is starting to damage the earthen structure.

The pumps may not be able to save the road even if they were put back into action. Water will net reach the pumps until the lake level is 4,208. By that time the causeway highway will be under water. According to Clarke, it would cost about 10 million to dig a channel that would allow the pumps to begin siphoning water into the west desert at a lake elevation of 4,206 feet above sea level.

Related to pumping is an attempt to define the lake’s flood plain, establish wetland policies, and determine how best to protect and conserve the lake’s freshwater marshes.

DNR is also looking at recreation and access opportunities for citizens and at protecting utility corridors primarily along the eastern and southern shores.

One thing DNR is very aware of is that any management solutions for the lake impact local communities adjacent to the lake, federal land managers and resource owners.

Rick Summers Dies at 42

A good friend to Utah's environment and water quality, Rick Summers, passed away July 30, 1999, after an intense battle with cancer.

Rick had a successful career with the State of Utah as a hydrologist. After receiving a master's degree in forest hydrology from Utah State University, Rick worked for the division of Oil, Gas and Mining, and then the division of Water Quality.

Rick was in charge of several important projects for his division and the Utah Nonpoint Source (NPS) Water Quality Task Force. He managed the grants tracking and reporting system, he coordinated the efforts NPS monitoring workgroup, and he wrote the silviculture addendum to Utah's NPS Strategy.

"Rick was always a positive and enthusiastic person to work with," said Mike reichert, his superviser at Water Quality. "He always looked creatively at solving the problem and addressing the issue in a constructive and effective manner. He was a wonderful colleague and 'friend' to our natural resources and the environment."

Rick leaves behind a wife and two children.

Wicked Thunderstorms Hit Lake Powell

Waves Swamp Boats in Wild Weather Year

Utah has had its share of weird weather this summer. Most recently a freak tornado swept through Salt lake City Killing one person, injuring dozens of others and causing millions of dollars of damage. Two weeks earlier on July 27, violent thunderstorms slammed in Lake Powell, with swells to 8 feet tall swamping at least two houseboats and forcing some recreationists to take shelter in other vessels. On the lake’s shore, flash floods roared through a campground and closed roads.

National Weather Service warnings gave visitors time to prepare for the onslaught. There were no injuries.

One boat sunk at Warm Creek Bay. Another boat travelling from Rainbow Bridge to Warm Creek was intentionally beached to avoid being sunk.

As the sotrm continued, lighting struck close to the national recreation area’s north and south entrances and the gas station Wahweap Marina, near the state boarder on the Arizona side.

A mud slide closed the road leading to Wahweap Marina on the Arizona side of the lake.

Mud also crossed the road at Antelope Point, AZ, the lake’s newest marina.

Before the storm hit, the National Weather Service has issued warnings. National Park Service rangers broadcast them by way of Marine Band Radio Channel 1, which many boaters monitor.

According to Larry Dunn, science officer at the National Weather Service regional office in Salt Lake City, the thunderstorms were part of the summer monsoons that bring moisture from the south.

“It was primarily Lake Powell that the storm hit,” he said. “As it moved north of the lake it weakened.”

Utah Water Planning Conference Set for October

Several state agencies and the Utah League of Cities and towns are putting together a conference for local planners to address important water issues.

The Utah Water Planning Conference will be held at the Zion Park Inn in Springdale, Utah, October 18-19, 1999.

The purpose of the conference is to provide a forum for water professionals and community planners to meet and discuss water issues that affect both: to learn about important components of addressing and delineating water protection areas.

Anyone interested in more information about the meetings can contact Stephanie at the Utah League of Cities and Towns, 1-800-852-8528, or e-mail her at scarlson@ulct.org. Registration materials are being mailed to all municipalities, coutnies, water districts and other interested parties.

Vendors and professionals will be available to meet with conference participants to anwer questions, give advice, and talk about new ideas and products.

The conference hotel, the Zion Park Inn, has se asside a block of room at a special rate. To qualify for that rate, you must make reservations before October 1, 1999. Call 1-800-934-7275.

Science or Fun? Radio Plane Pilots Say it's All up in the Air

Radio-controlled planes provide birdseye view of watersheds, cost less than manned craft

Wally Barrus, readies a plane for takeoff. While the plane can takeoff from a dead stop on the ground, this method takes a long runway. Barrus and Quilter usually take turns behind the controls. The other person runs and tosses the plane like a football.

Radio-controlled airplanes are proving to be an effective water quality planning and monitoring tool for the Utah Department of Agriculture and Food. Significantly less expensive than chartering an airplane or helicopter, the radio-controlled version can also provide better quality photos.

"You can see how things relate to each other and how they are spaced," said Mark Quilter, groundwater specialist, Utah Dept of Agriculture and Food (UDAF). "You can see how their spacing affect things."

"In chalk Creek, for example, we have been able to tell which stream barbs are working and which ones are not" Quilter explained.

The aerial photographs can also shows water pollution problems, He explained. "You can see erosion. You can see where pollution is entering the stream. You can also see the historic paths of the river."

Because scientists and engineers can determine distances, slope, and height of objects such as trees and boulders, the model planes can save time and money in data collection.

"It freezes one moment in time," Quilter remarked. That allows hydrologists to collect data with a few photographs and then move on to the next stretch of river. This can be done all summer and the data can be interpreted in the office during the winter months.

"If you were taking all of the measurements on the ground it could take a week or more."

Flying at 1,000 feet above the ground, each photo using a standard 52 mm lens shows about eight acres. At the minimum height of 50 feet, the photo area is 1/200 acre. According to Quilter, photos that show about two acres at a time are best for analyzing most farms and watershed segments.

Of course there are some drawbacks to the small planes. They can only cover smaller areas. In a helicopter of small manned plane, it is easy to cover a 20 or 30 miles segment of river in an hour or less. That includes time for taking multiple passes at certain spots along the way. In the radio-controlled plane, however, distance of signal and line of sight between the operator on the ground and the plane itself are a limiting factor. Every time the crew has to pack up the planes and move to another sight it takes more time.

Most of the time its takes two people to fly a farm or watershed section. Sometimes the planes can take off themselves from a road. Most of the time, however, they are launched by hand by a second person.

The controls of the plane are fairly simple and straight forward, said Quilter. There is a throttle that controls the speed and altitude of the plane. The elevator controls the attitude of the nose as it attacks the air. Finally, there is a switch for the camera, which allows the operator to snap the aerial photo from the ground.

"The planes basically fly themselves," said Quilter with a subdued sense of boyhood enthusiasm. He said that it takes about two hours of stick time with an experienced pilot before most people are confident enough to solo. After about 20 hours, you can be pretty good.

However, accidents do happen. Repairs are a part of the whole experience, Quilter commented. However, he said that they have never ruined the most expensive equipment, which include the motor, radio, and camera.

The parts for the size plane that carries a camera cost about $1,000. To assemble the plane yourself it will take anywhere from 100 to 200 hours of labor. Finally, there is the cost of the camera. They usually use a 35 mm single lens reflex camera. The camera body and a good lens or two can easily cost another $1,000.

The planes and pilots can be hired. The going rate is about $50 an hour. UDAF is currently looking into purchasing one or two planes. According to Quilter, the investment will pay for itself well within the first season of use.

It can cost the state anywhere from $250 - $500 an hour to charter a small plane or helicopter for an aerial photo flight. The radio-controlled planes are less expensive and provide even better photos. This is because the planes fly lower and slower.

Bill Rigby: Conservation Farming on a Hill

Conservation farming is all downhill for Bill Rigby. The former president of the Utah Association of Conservation districts loves to take people around his 36 acres of row crops and orchards at the top of the Centerville bench in Davis County.

"Look at the water coming out of the end of the rows," Rigby said as he pointed to the clear streams of water. "You see that, there's nothing coming off those rows."

Rigby uses gated pipe to distribute water downhill to each of the rows. The hillside runs from east to west, so his rows are cut north to south. The gated pipe and regulated flow rates also help keep soil in place.

Rigby is also careful with his use of fertilizers, herbicides and pesticides.

"The city [drinking water] well is just a few hundred yards from here."

Instead of spraying fertilizers at pre-determined intervals, he waits until he sees a need and then mixes the fertilizer into the watering rotation at the end of each row. As the water carries the food the plants drink up the nutrients.

"You can see the difference in the size of plants on the same row. Sometimes it takes several days for them all to get covered."

Rigby says that spraying the crops all at once can waste a lot of chemicals that can then run down the ditch or absorb into the ground.

Bill Rigby runs an old-fashioned produce farm with some modern ideas about soil conservation and water quality. The gated pipe irrigation system keeps erosion to a minimum.

The Rigby farm is a throw back to a by gone era. He, his wife Helen, and neighborhood children hired as pickers, harvest the squash, corn and tomatoes. They stack them in boxes, put them in the back of pickup trucks and then Bill drives the fresh produce to Sat Lake Produce or another distributor.

He also farms about 50 acres or so in the valley, near Great Salt Lake. It's his hillside farm, however, that he holds up as a positive example of conservation farming.

If your goal is conserving the soil and keeping the water clean, it's not that difficult, says Rigby. It does require a certain amount of thought and effort, especially when your fields are on 15-20 degree slopes.

And Rigby shows no signs of slowing down. As he drove his tractor up the hill he pointed out an orchard that he has let die.

"I'm going to replant those fruit trees next year," he said. In a few years they'll start bearing fruit."

Those are pretty ambitious words for a man in his 70s.

The Rigby's employ neighborhood children to pick the crops.It gives a few urban children a chance to know what it is like growing up on a farm. Their parents love that it is good, honest work. It also helps keep Rigby's relationship with the neighbors pleasant.